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EXAMINER

WOOD, KEVIN S

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 06/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/907,252

Applicant(s)

ZALEVSKY ET AL.

Examiner

Kevin S Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2,3,6-15,17-44,46-54 and 56-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-12,17-44,46-54 and 56-60 is/are allowed.
- 6) ☒ Claim(s) 2 and 6 is/are rejected.
- 7) ☒ Claim(s) 3,7,8 and 13-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 2/28/03 have been fully considered but they are not persuasive. The examiner has thoroughly reviewed the applicant's arguments but firmly believes the cited references to reasonably and properly meet the claimed limitations. The applicant's primary argument is that U.S. Patent No. 6,360,037 to Riza does not include all the limitations of the claim 2 and claim 6. Specifically, the applicant argues that the reference does not disclose that the input beam is split into two beam components of different polarizations propagating along different optical paths. The examiner respectfully disagrees with this argument.

The applicant points out that within the reference, the input beam has already been separated into two beam components of different polarizations by the beam displacing prism (BDP), before they are incident on the polarizing beam splitting surface. The examiner agrees with this portion of the argument. However, it is clear that within the reference the two beam components of different polarizations are propagating along the **same** optical path and are not split into components propagating along **different** optical paths until they are incident upon the polarizing beam splitting surface.

### *Specification*

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

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The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

4. The abstract of the disclosure is objected to because it is in the form of a claim.

Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

6. Claims 2 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,360,037 to Riza.

Referring to claim 2, Riza discloses all the limitations of the claimed method.

Riza discloses a method for selectively directing an input beam (1,2) to at least one of two output channels (1',2'), the method comprising: providing incidence of the input beam onto a polarizing beam splitting surface (PBS) to thereby enable splitting of the input beam into two beam components of different polarizations along different optical paths; passing the input beam components of different polarizations through a controllable polarization rotating medium operable to selectively affect the polarization of each of the beam components (34); and directing the beam components that have passed through a polarization rotating medium (34) onto the polarizing beam splitting surface (PBS), thereby producing at least one output beam propagating towards at least one selected output channel, depending on a current mode of the medium; wherein the input beam passes through the controllable polarization rotating medium (34) prior to

being split into the two beam components of different linear polarization states. See Fig. 4a and 4b, along with their respective portions of the specification.

Referring to claim 6, Riza discloses all the limitations of the claimed invention. Riza discloses a switching method including: providing incidence of an input beam onto a polarizing beam splitting surface (36) to thereby enable splitting of the input beam into two beam components of different polarizations propagating along different optical paths; passing at least one of the split beam components of the input beam through an optical filtering means (42,44) accommodated in the optical path of at least one split beam component, thereby enabling to filter light that has interacted with the polarizing beam splitting surface to correct for an error introduced by the polarizing beam splitting surface; passing the input beam components of different polarizations through a controllable polarization rotating medium (34) operable to selectively affect the polarization of each of the beam components; directing the beam components that have passed through the polarization rotating medium onto the polarizing beam splitting surface (34), thereby producing at least one output beam propagating towards at least one selected output channel. See Fig. 3a and 3b, along with their respective portions of the specification.

***Allowable Subject Matter***

7. Claims 9-12, 17-44, 46-54 and 56-60 are allowed.

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8. Claims 3, 7, 8 and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

Referring to claim 3, the prior art does not disclose all the limitations of the claimed method. The prior art does not disclose a switching method as claimed, including: the output beam being directed toward an additional polarizing beam splitting surface, and passing split beam components of the output beam through additional controllable polarization rotating medium.

Referring to claim 7, the prior art does not disclose all the limitations of the claimed method, including the step of passing at least one of the split beam components of the input beam through an optical filtering means accommodated in the optical path of at least one split beam component, to filter light that has interacted with the polarizing beam splitting surface to correct for an error introduced by the polarizing beam splitting surface, where the filter means comprises an additional polarizing beam splitting surface, light reflected from the additional polarizing beam splitting surface propagating towards the controllable polarization rotating medium.

Referring to claim 8, the prior art does not disclose all the limitations of the claimed method, including the filtering means being a polarization rotating element capable of 90-degree rotation of the incident beam component.

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Referring to claims 9 and 56, the prior art does not disclose all the limitations of the claimed method, including providing incidence of the split beam components of the input beam into a controllable polarization rotating medium operable to selectively affect polarization of each of the beam components, with an incidence angle other than 90 degrees.

Referring to claims 10-12, the prior art does not disclose all the limitations of the claimed method, including the medium being operated to provide a desired difference in phase delay in a range  $0 - \lambda/2$  between two principal axes of the medium, thereby enabling to obtain desirable partition between the two output channels.

Referring to claim 13, the prior art does not disclose all the limitations of the claimed method, including the medium being selected to compensate for a hysteresis phenomenon occurring in the medium.

Referring to claim 14, the prior art does not disclose all the limitations of the claimed method, including an electrostatic field applied to the medium is selected so as to fit phases of the beam components passing therethrough, thereby compensating for a phase shift caused by beam reflection effects during the beam propagation.

Referring to claim 15, the prior art does not disclose all the limitations of the claimed method, including an electrostatic field applied to the medium such as to cause a difference of  $\lambda/2$  in phase delay between the split beam components of different polarizations, the method thereby enabling to reduce switching differential voltage requirements.



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Referring to claims 26, 17-19, 24, 27-30, 37, 46 and 58, the prior art does not disclose all the limitations of the claimed method, including the controllable polarization rotating medium comprises two elements made of a polarization rotating material, and the beam directing means comprises two retro-reflective elements associated with the two polarization rotating elements, respectively, so as to reflect the beam components of different polarizations of the input beam towards the polarization rotating elements, and reflect the beams passed through the polarization rotating elements onto the polarizing beam splitting surface.

Referring to claims 31-36, 38 and 59, the prior art does not disclose all the limitations of the claimed method, including the beam directing means at least partly incorporated within the controllable polarization rotating medium.

Referring to claims 39 and 60, the prior art does not disclose all the limitations of the claimed method, including the polarizing beam splitting surface is a surface of a polarizing cubic beam splitter, which has three truncated corners forming three locally adjacent facets, such that the intermediate facet intercepts with a plane of the polarizing beam splitting surface, the polarization rotating means being in the form of a plate accommodated at the intermediate facet outside of the beam splitter and having a reflective surface.

Referring to claims 49-50, the prior art does not disclose all the limitations of the claimed method, including the two output channels of the first switch device are two input channels, respectively, of the second and third switch devices, one of the output channels of the second switch device and one of the output channels of the third switch

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device being blocked to prevent light output therethrough, light signals collected at unblocked output channels of the second and third switch devices being thereby characterized by reduced crosstalk.

Referring to claims 57, 20-23, 25, 40-42, 47, 48 and 51-54, the prior art does not disclose all the limitations of the claimed method, including the medium being selected from the group consisting of lithium niobate and materials exhibiting a quadratic electro-optic effect.

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S Wood whose telephone number is (703) 605-5296. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 307-0956.

KSW  
June 5, 2003

A handwritten signature in black ink, appearing to read "Brian Healy". The signature is fluid and cursive, with the first name "Brian" and last name "Healy" clearly distinguishable.

Brian Healy  
Primary Examiner